

Work Order ID 57525

April 8, 2010 8:10:18 AM



Page 1

Item ID: D3564-5

Accept



Setup Start



Revision ID:

Stop



Item Name: Wearshoe

Start Date: 4/08/10 Start Qty: 12.00



Cust Item ID:

Required Date: 4/14/10 Req'd Qty: 12.00



Customer:

Reference:

Run Start



Approvals: Process Plan: W Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr | Revision Nbr |
|----------|--------------|
|----------|--------------|

| | |
|-------|-------|
| D3564 | Rev D |
|-------|-------|

100

0.00



FLOW WATER JET

Waterjet

Memo

0.00

FLOW CNC Waterjet

1-Cut as per Dwg D3564 ☒ Dwg Rev: D ☐ Prog Rev: D ☐ 2-
Deburr if necessary

304.063

MAY NOT PULLER

13 10-4-8

(12)

110

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

13 10-4-8

120

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

8/10/04/09

(12)

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 57525

April 8, 2010 8:10:19 AM



Page 2

Item ID: D3564-5

Accept



Setup Start



Revision ID:

Item Name: Wearshoe

Stop



Start Date: 4/08/10 Start Qty: 12.00



Cust Item ID:

Required Date: 4/14/10 Req'd Qty: 12.00

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
| 130 Brake NC | NC BRAKE | 0.00 | | | | | | | |
| Brake NC | Memo Deburr if necessary <input type="checkbox"/> Form on Brake as per Dwg D3564 using Jigs DT8179 and DT8155 <input type="checkbox"/> Form Joggle as per Dwg D3564 on brake using Jig DT8157 | 0.00 | | | | 12 | 0 | | |
| 140 QC | QC5- Inspect part completeness to step on W/O | 0.00 | | | | | | | |
| Quality Control | Memo Ensure joggle as per dwg D3429 | 0.00 | | | | 12 | | | |
| 150 Powdercoat | Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3 | 0.00 | | | | | | | |
| Powder Coating | Memo START TIME: 8:00AM <input type="checkbox"/> OVEN TEMPERATURE: 320°F FINISH TIME: 8:30AM | 0.00 | | | | 12 | | | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 57525

April 8, 2010 8:10:19 AM



Page 3

Item ID: D3564-5

Accept



Setup Start



Revision ID:

Stop



Item Name: Wearshoe

Start Date: 4/08/10 Start Qty: 12.00



Cust Item ID:

Required Date: 4/14/10 Req'd Qty: 12.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

BL 10-4-16

(12)

d

170

Identify as per dwg & Stock Location: FP-19

0.00



Packaging

Memo

0.00

Packaging

JL 10/04/16

x 12

d

180

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/04/19 dJ

PL 10-4-16
(12)

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
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| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

April 8, 2010 8:10:17 AM

Page 1

Work Order ID: 57525



Parent Item: D3564-5



Parent Item Name: Wearshoe

Start Date: 4/08/10

Required Date: 4/14/10

Comments: IPP Rev:A New Issue 07-03-08 ec
IPP Rev:B As per Rev C 07-07-09 JLM
IPP Rev:C As per Rev D 07-09-09 JLM Verified By:EC
IPP Rev D added DT# 08.04.21 DD Verified by EC

Start Qty: 12.00

Required Qty: 12.00

M304S16GA

Purchased

No

100

sf

34.2000

18.9474



13 10-4-8

304/316 Sheet .063

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

MAT20

113295

34.2

34.2

12

113295

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| | | |
|-----------------------|--------|----------------------|
| DART AEROSPACE LTD | | Work Order: 57525 |
| Description: Wearshoe | | Part Number: D3564-5 |
| Inspection Dwg: D3564 | Rev: D | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

| Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|-------------------|---------------|------------------|--------|--------|----------------------|----------|
| 43.50 | +/-0.030 | 43.50 | ✓ | | | |
| 6.75 | +/-0.030 | 6.75 | ✓ | | | |
| 10.00 | +/-0.030 | 10.00 | ✓ | | | |
| 20.00 | +/-0.030 | 20.00 | ✓ | | | |
| 30.00 | +/-0.030 | 30.00 | ✓ | | | |
| 2.50 | +/-0.030 | 2.500 | ✓ | | | |
| 3.227 | +/-0.010 | 3.229 | ✓ | | | |
| 38.500 | +/-0.010 | 38.500 | ✓ | | | |
| 5.500 | +/-0.010 | 5.500 | ✓ | | | |
| 2.50 | +/-0.030 | 2.500 | ✓ | | | |
| 2.432 | +/-0.010 | 2.435 | ✓ | | | |
| 0.300 x 0.300 | +/-0.010 | 301 x 303 | ✓ | | | |
| Ø0.188 | +0.005/-0.001 | .189 | ✓ | | | |
| R0.375 | +/-0.010 | .375 | ✓ | | | |
| 0.063 | +/-0.010 | .059 | ✓ | | | |
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| | | | |
|-----------------|----------------|---------------------|-----|
| Measured by: HB | Audited by: S | Prototype Approval: | N/A |
| Date: 10-4-8 | Date: 10/01/09 | Date: | N/A |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|-----------|------------|----------|
| A | 08.01.16 | New Issue | KJ/EC/DA | DA |

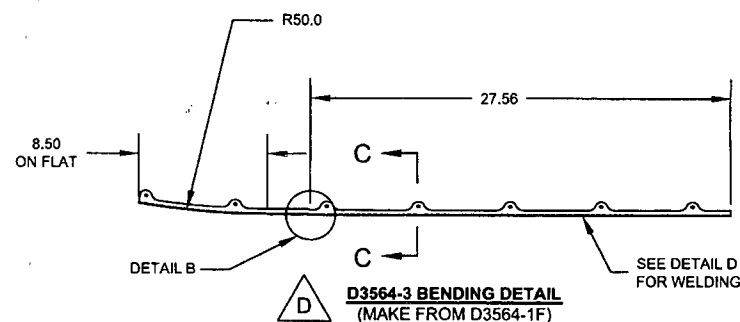
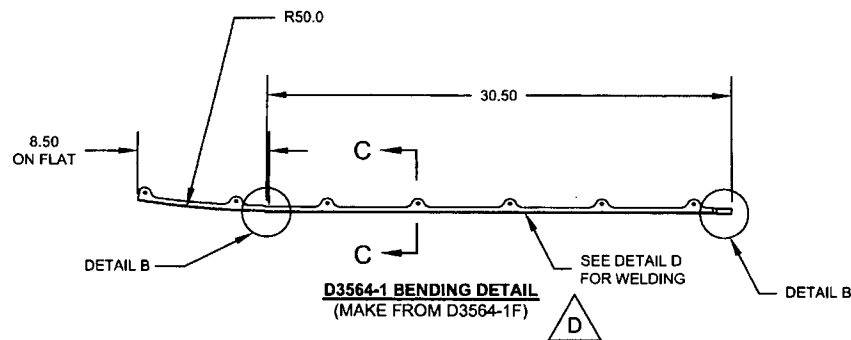


7 deadly wastes

- 1. Overproduction***
- 2. Rework***
- 3. Transportation***
- 4. Inappropriate / over Processing***
- 5. Unnecessary Inventory***
- 6. Delays / Waiting***
- 7. Unnecessary Motions***

D3564-1F FLAT PATTERN

RELEASED
07.09.04



w/o 57525

D3564-1/-3/-5/-7/-9/-11/-13/-15 WEARPLATE NOTES:

- 1) MATERIAL: AISI 304/316 SS SHEET PER AMS 5513 OR AMS 5524, 16 GAUGE (0.063 THICK) (REF DART MATERIAL SPEC M304S16GA)
- 2) FINISH: POWDER COAT GREY SANTEX (REF 4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: SEE TABLE IN ZONE A3
- 8) WELD PER DART QSI 004
- 9) SEE PG 3 FOR SECTIONS AND DETAILS
- 10) PARTS ARE SYMMETRIC ABOUT C

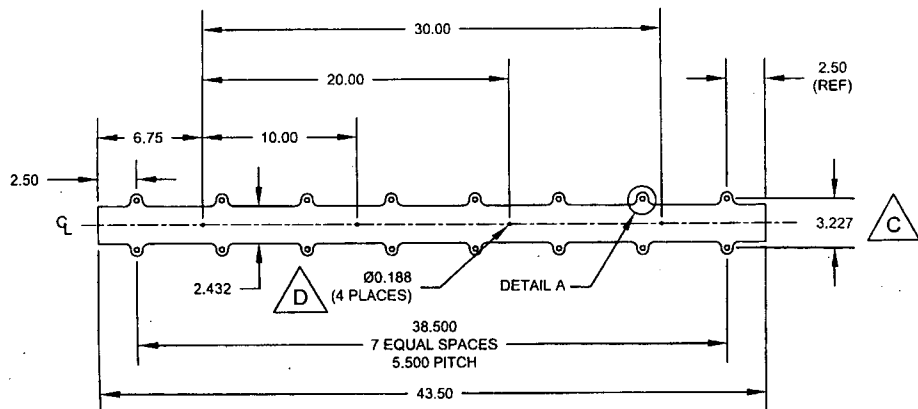
| WEIGHTS: | |
|----------|----------|
| D3564-1 | 1.85 lbs |
| D3564-3 | 1.85 lbs |
| D3564-5 | 1.93 lbs |
| D3564-7 | 1.26 lbs |
| D3564-9 | 1.85 lbs |
| D3564-11 | 1.85 lbs |
| D3564-13 | 0.38 lbs |
| D3564-15 | 0.80 lbs |

| | | | |
|---|--|--------------|----------|
| D | UPDATE DRAWING TEMPLATE; CHANGE ALL (TYP X PLS) TO (X PLACES); PG1 A8: UPDATE NOTES; PG1 A8, PG3 B5,C5: ADD D3564-15; PG1 B6,B3: D3564-1/-3 WAS ONE FIGURE; PG2 A7,A3: D3564-9/-11 WAS ONE FIGURE; PG2 A7,A3: D3564-9/-11 WAS ON PG1; PG3 B8,C8: D3564-13 WAS ON PG2; PG3 D2: WELDING DETAIL WAS ON PG1 PG3 A5,7,B2: RELOCATE DETAILS AND SECTION; PG3 A5,7,B2: INCREASE DETAIL AND SECTION SIZE | CB | 07.08.21 |
| C | MOVE TAB OUTBOARD, DETAIL A | PH | 07.04.17 |
| B | ADD AMS 5513 AND AMS 5524 | PH | 07.03.20 |
| A | NEW ISSUE | PH | 06.12.18 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | PH | | |
| DRAWN | CB | | |
| CHECKED | PH | | |
| MFG. APPR. | PH | | |
| APPROVED | PH | | |
| DE APPR. | PH | | |
| DATE | 07.08.21 | | |
| DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | | | |
| DRAWING NO. | | REV. D | |
| D3564 | | SHEET 1 OF 3 | |
| TITLE | | SCALE | |
| WEARSHOE | | 1: | |
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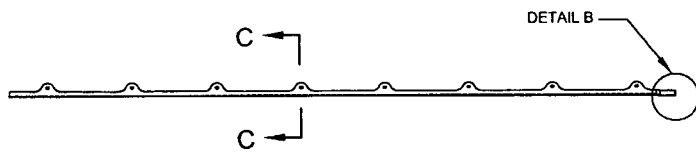
Value stream mapping

- Value stream mapping is **the best way to identify where the high payoff** opportunities are, yet value stream mapping is the lean tool most likely to **not be used by** companies doing pretend lean!

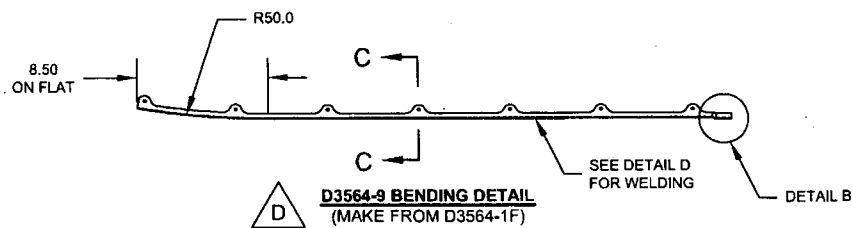
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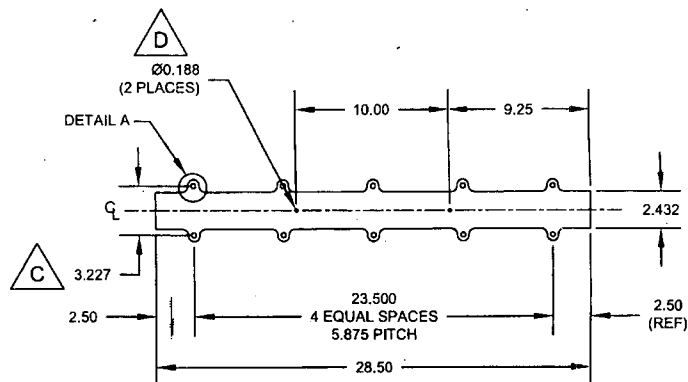
D3564-5F FLAT PATTERN



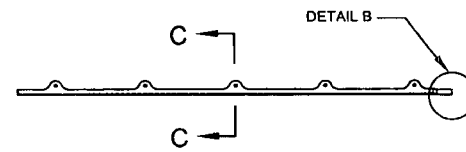
D3564-5 BENDING DETAIL
(MAKE D3564-5 FROM D3564-5F)



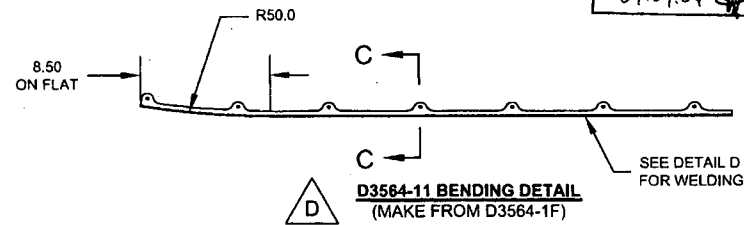
D3564-9 BENDING DETAIL
(MAKE FROM D3564-1F)



D3564-7F FLAT PATTERN



D3564-7 BENDING DETAIL
(MAKE D3564-7 FROM D3564-7F)



D3564-11 BENDING DETAIL
(MAKE FROM D3564-1F)

RELEASED
07.09.04

W/0 57525

| | | | |
|------------|----------|---|--------|
| DESIGN | PH | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | CB | | |
| CHECKED | PH | DRAWING NO. D3564 | REV. D |
| MFG. APPR. | PH | SHEET 2 OF 3 | |
| APPROVED | PH | TITLE | SCALE |
| DE APPR. | PH | WEARSHOE | 1:8 |
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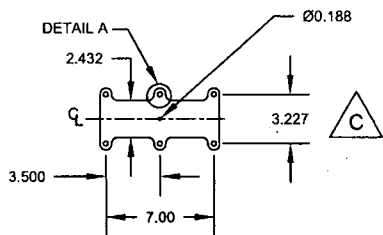
8 7 6 5 4 3 2 1



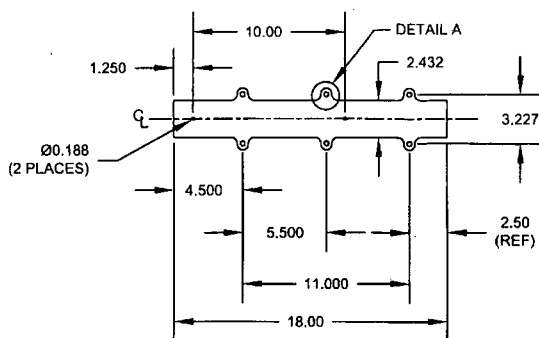
Lean is...

- Promote customer-orientation rather than resource-orientation (produce for sales not for stock).
- A highly evolved method of managing an organization to improve the productivity, efficiency and quality of its products or services.
- Transforms how the company operates and how employees think about their work. Don't work harder but smarter by transferring your energy from the NVA to the VA activities.
- Has no end (there is no "done").

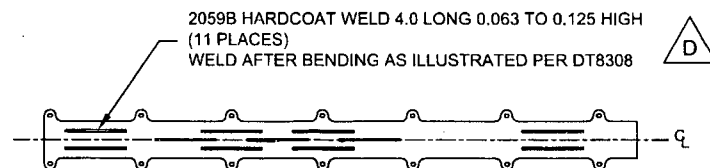
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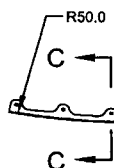
D3564-13F FLAT PATTERN



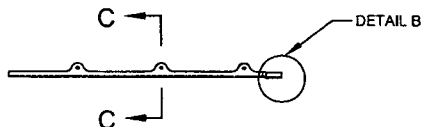
D3564-15F FLAT PATTERN



DETAIL D
(D3564-1/-3/-9/-11 WELDING DETAIL)



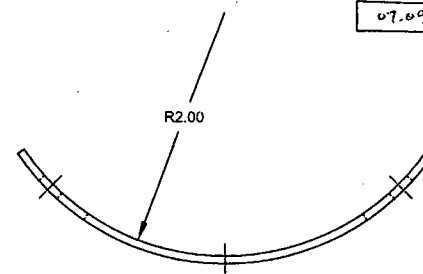
D3564-13 BENDING DETAIL
(MAKE D3564-13 FROM D3564-13F)



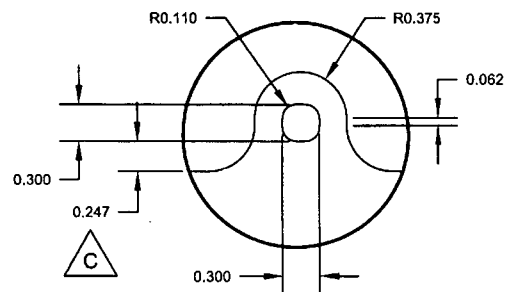
D3564-15 BENDING DETAIL
(MAKE D3564-15 FROM D3564-15F)

RELEASED

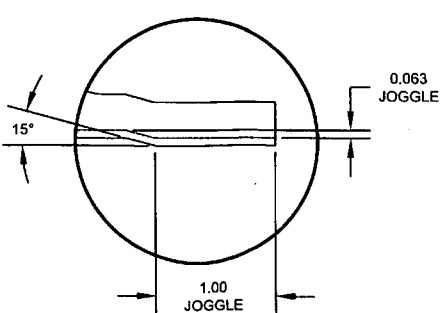
07.09.04



SECTION C-C
SCALE 1:1



DETAIL A
SCALE 1:1



DETAIL B
SCALE 1:1

w/p 57525

| | | | |
|--|----------|--|--------------|
| DESIGN | PH | DART AEROSPACE LTD | |
| DRAWN | CB | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | PH | DRAWING NO. | REV. D |
| MFG. APPR. | PH | D3564 | SHEET 3 OF 3 |
| APPROVED | PH | TITLE | SCALE |
| DE APPR. | PH | WEARSHOE | 1: |
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8 7 6 5 4 3 2 1



Lean principle

To be able to produce exactly:

- **what is required**
- **when it is required**
- **the quantity required**

by the next step in the process.

Once a job started, it should ideally never stop